

Cultivating communities of practice for innovation: What about SMEs?

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Cultivating communities of practice for innovation: What about SMEs?

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Abstract

Knowledge is a key factor for competitiveness and innovation for many small and medium-sized enterprises (SMEs) (Handzic, 2006). However, SMEs often lack absorptive capacity because they have no formal strategy for developing, capturing, disseminating, sharing, or applying knowledge (Beijerse, 2000). It has been suggested (Wenger, 1998; Lesser and Prusak, 1999; Allee, 2000) that communities of practice (CoPs) might be an effective way to capture and share tacit knowledge as well as leverage the social capital (Lesser and Prusak, 1999) necessary for innovation (Landry, et al 2002). There is also some indication that knowledge spillovers within CoPs can strengthen their ability to exploit their innovations (Autio, et al 2008). On the other hand, SMEs often struggle to participate in open innovation, because of knowledge transfer problems caused by organisational and cultural differences (Van de Vrande, et al 2009). Given that CoPs are becoming more commonly seen as a knowledge management (KM) tool for supporting innovation (Swan, et al 2002), this paper reviews the literature on CoPs and comments on their appropriateness in the context of SMEs.

Communities of practice

In knowledge management (KM) terms, a community of practice (CoP) is a group of people informally bound together by shared expertise and a passion for a joint enterprise (Wenger and Snyder, 2000). Wenger (1998) sees the structure of a CoP consisting of three interrelated elements; mutual engagement, joint enterprise and shared repertoire (Table 1) and describes four structural components that can be used to identify a CoP (Table 2).

Table 1 The structure of a CoP (Wenger, 1998, p.72)
The Community (Mutual Engagement) - through participation in the community members can establish norms and build collaborative relationships. These relationships represent the ties that bind the CoP members together.
The Domain (Joint Enterprise) - through their interactions, CoP members create shared understanding of what binds them together. The joint enterprise is negotiated by CoP members and is sometimes referred to as the domain.
The Practice (Shared Repertoire) - through practice the CoP develops communal resources. These are used in the pursuit of their joint enterprise and can include both literal and symbolic meanings.

Table 2 Four structural components of a CoP (Wenger, 1998, p.5)
1. Meaning - talking about the (changing) ability - individually and collectively – to experience life/the world as meaningful;
2. Practice - discussing shared historical/social resources, frameworks, and perspectives that sustain mutual engagement in action;
3. Community – discussing social configurations in which enterprises are defined as worth pursuing and participation is recognizable as competence;
4. Identity - a way of talking about how learning changes individuals and creates personal histories of becoming in the context of the communities.

CoPs have existed for many centuries and some examples that have been cited include corporations of craftsmen in ancient Greece and artisan guilds set up in the Middle Ages (Wenger and Snyder 2000). CoPs were originally developed to support learning and

originated with the work of cognitive anthropologists Lave and Wenger (1991). Early conceptualisations of CoPs claim they cannot be managed because of their emergent, informal and self governing nature (Wenger, 1998; Wenger and Snyder, 2000).

Lave and Wenger's (1991) original work has been criticised for being a study of rather circumscribed social configurations, such as apprentice meat cutters and midwives (Assimakopoulos, 2007). The main accusation here is that there is a failure to acknowledge that in complex, knowledge intensive industries, such as ICT, innovation usually occurs across, rather than within organizational boundaries (Carayannis and Alexander, 1999). Innovation in these more complex sectors often emerges through the creation of joint ventures and personal information networks (Assimakopoulos and Macdonald, 2002) rather than through attempts to construct CoPs. More recently, CoP theory has been adapted by knowledge management theorists and used to highlight their value in relation to increasing firms' absorptive capacity¹ and improving learning (Autio, et al 2008) and innovation (Scarbrough, et al 2004; Assimakopoulos, 2007) in organisations. However, research has tended to focus on CoPs in large firms (Brown and Duguid, 1991; Wenger, et al 2002; Swan, et al 2002; Loyarte and Rivera, 2007; Probst and Borzillo, 2008), with little empirical data relating to the existence of CoPs, or their management or cultivation, in SMEs.

Governance of CoPs

More recent treatments of CoPs (McDermott and Archibald, 2010) have suggested that they can and should be actively managed with "specific goals, explicit accountability, and clear executive oversight" (p.84). An alternative view to this (Newell, et al 2001; Hildreth and Kimble, 2002; Wenger, et al 2002; Saint-Onge and Wallace, 2003) is that CoPs need to be cultivated rather than managed. *Management* implies control, which arguably stifles creativity, sharing and self-initiative (Andriessen and Verburg, 2004). *Cultivation* implies less control, allowing CoPs to retain much of their independence whilst still receiving appropriate organisational support (Wenger, et al 2002). CoPs play a role in the creation of collective knowledge and managers should respect the 'situated activity' occurring within CoPs in order to develop them (Corso, et al 2001). By setting a strategic context and providing direction (Table 3), rather than direct management, allows CoPs to find a legitimate place within an organisation. However, SMEs often lack understanding of what they want to accomplish or how to implement a knowledge management environment

(Hamburg, 2009) and there is often a lack of evidence of an overall strategy with respect to managing their knowledge (Riege, 2005).

Table 3 Seven principles for cultivating CoPs (Wenger, et al 2002, p.51)
1. Design for evolution – communities are dynamic and constantly changing;
2. Open dialogue between inside and outside perspectives – bridge the gap between CoP and external community;
3. Invite different levels of participation – engage peripheral as well as the core members;
4. Develop public and private community spaces – allow members to communicate with each other and external members;
5. Focus on value – the community domain should add value to the organisation;
6. Combine familiarity and excitement – routine activities allow the development of relationships, whereas “exciting events”, such as conferences, fairs and workshops, (p.62) help keep the community alive;
7. Create a rhythm for the community – identify milestones to create a community tempo.

Research into CoPs has suggested a variety of cultivation methods. Cross and Prusak (2002), for example, focus on individual actors, identifying four common role-players in the cultivation process: central connectors, boundary spanners, information brokers and peripheral specialists. SMEs, however, may simply have a limited number of external linkages, or boundary-spanning opportunities available to them (Sawyer, et al 2003) and therefore find it difficult to cultivate CoPs. Saint-Onge and Wallace (2003) suggest that organisations must develop a shared sense of purpose and ownership with the CoP based on mutual trust. Such approaches focus on CoPs in large organisations and might not be appropriate for SMEs, who are often very secretive about their processes, and who operate within a culture of customer confidentiality (Bagchi, 2010) making sharing knowledge difficult. Probst and Borzillo (2008), for instance, focus on the role of sponsors in their governance model (Table 4) and in more recent work, Borzillo (2009) reiterates that, although some control is required, in order to align the CoP with strategic goals, it is never possible to maintain total control because this would destroy the independent nature of the CoP.

Table 4 The Ten Commandments of CoP Governance (Probst and Borzillo, 2008, P.339)
1. Stick to strategic objectives;
2. Divide objectives into sub-topics;
3. Form governance committees with sponsors and CoP Leaders;
4. Have a sponsor and a CoP leader who are best practice control agents;
5. Regularly feed the CoP with external expertise;
6. Promote access to other intra and inter organisational networks;
7. The CoP leader must have a driver and promoter role;
8. Overcome hierarchy-related pressures;
9. Provide the sponsor with measurable performance;
10. Illustrate results for CoP members.

Borzillo (2009) investigated three governance mechanisms for guiding CoP development: tight control over quality and performance in relation to CoP best practice, governance committees to assess CoP activities and multiplication agents to promote best practice across the organisation. The level of control here seems more in line with managing CoPs rather than cultivating them and certainly seems to be describing a more formal group than early conceptualisations of CoPs. Borzillo's original data, from 2007, focuses on the roles of CoP leaders in 21 large multinational organisations, including Siemens, Oracle, and IBM and, thus perhaps offers little, if anything, for those interested in SMEs.

Loyarte and Rivera (2007) posit that the success of CoPs is closely linked to the personal, intrinsic motivation of individual members and is therefore largely outside the control of the organisation. This is supported, to some extent, by their observations of a struggle between CoP control and independence. In one organisation, where CoP membership was compulsory, the organisation claimed it "got successful CoPs to achieve the pursued objectives" (p. 72). It could be argued this 'successful CoP' was, in reality, a formal work group. Loyarte and Rivera's model 4 phase cultivation model (Table 5) also seems to be better described as a tool to identify the presence of existing CoPs rather than a practical guide to their cultivation.

Table 5 Four phase CoP cultivation model (Loyarte and Rivera, 2007, p. 73)
1. Analysis for the detection of CoPs, i.e. do COPS already exist?
2. CoP necessity, i.e. cost versus benefit?
3. CoP cultivation process, i.e. the best cultivation process to adopt?
4. Evaluation, i.e. has cultivation supported organisational objectives?

McDermott and Archibald's (2010) research was based on an earlier survey (McDermott and Archibald, 2008) of 52 CoPs in 10 large organizations, including ConocoPhillips, Deloitte, Oracle and Schlumberger. They also interviewed a wide variety of staff in over 140 CoPs in a dozen other large organisations. However, there are no details of the research methodology adopted in the study, commissioned by the Knowledge and Innovation Network based at Warwick Business School and Schlumberger, an oil-field services company. McDermott and Archibald's (2010) four principles; focus on issues important to the organisation, establish community goals and deliverables, provide 'real' governance and set high management expectations (Table 6), seem at odds with the notion of CoPs being emergent and independent, although they do propose other ways to maximise the impact of CoPs, more aligned to the cultivation approach. These include setting aside time for participation, training CoP leaders, holding face to face events and using simple IT tools.

Table 6 Four principles for designing effective CoPs (McDermott and Archibald, 2010, p.85)
1. Focus on issues important to the organisation - sustainable CoPs tackle real problems defined by senior management;
2. Establish community goals and deliverables - formal goal/deliverables energize CoPs and provide focus;
3. Provide real governance - to be integrated into the organisation CoPs need strong, formal relationships with top leadership;
4. Set high management expectations – management expectation has a strong influence on success and senior management should therefore engage with CoPs.

Mason, et al (2008) highlight the potential contribution of ICT networks, especially to SMEs, for sharing information within an industry cluster. They propose a modified version of the CoP, called the 'community of enterprise' (CoE) and its counterpart the 'virtual community of enterprise' (VCoE), which highlight "the importance of participating SMEs and their relationships across industry boundaries" (p. 6). According to Mason, et al (2008) the VCoE concept addresses the unique knowledge management requirements of SMEs, providing a way to engage and link together SMEs from different industries. On the other hand, Braun (2006) suggests that ICT adoption in SMEs is related to the size and nature of individual firms as well as being dependent on their perception of affordability and business growth opportunities it presents to them. SMEs are often risk averse and focus on the traditional aspects of CoPs (Dewhurst and Cegarra Navarro, 2004) such as lunches, visits and other informal activities, whilst undervaluing the innovation potential of a more involved approach, i.e. by providing time for participation or for training CoP leaders.

The argument for more structure and less independence, posited by McDermott and Archibald's (2010) does make CoPs seem more like a formal work group with a supervisor leading task based activities. Imposing such a formal structure and thus reducing the independence of members seems likely to destroy the organic, spontaneous and informal nature of CoPs (Wenger and Snyder, 2000) which differentiates them from these formal groups. Lack of independence may discourage voluntary membership and might reduce levels of trust, both essential elements of a CoP. The governance of CoPs, whether through management or cultivation, presents difficulties for SMEs who are often hostile towards knowledge sharing because of lack of trust, misunderstandings about what tacit knowledge means, internal conflicts, negative experiences with innovation, motivation issues and lack of sharing mechanisms (Hamburg and Marin, 2010).

Social capital

Social capital describes the connections within and between social networks, including CoPs. In this sense, social capital is defined as both the resources that personal contacts hold, and as the structure of contacts within a personal network (Burt, 1992). Putnam (2000) cites Hanifan (1916) as coining the phrase 'social capital' to explain the importance of community involvement in sustaining democracy and economic development. Bourdieu (1983:1984), Coleman (1994) and Putnam (2000) are three of the main theorists cited for developing a contemporary concept of social capital (Lang and Hornburg 1998; Carroll and Stanfield

2003; Claridge, 2004). Writing from within a broadly Marxist framework, Bourdieu (1983) distinguishes between three types of capital - economic capital (i.e. cash and other tangible assets); cultural capital (i.e. education, knowledge and skills) and social capital (i.e. networks of relationships). Bourdieu (1983) argues that social capital functions as the tool of an elite class who use it to maintain their superior class position in society. Coleman (1988), on the other hand, adopting an arguably over optimistic view, describes social capital in terms of a public good² that even marginalised communities and individuals can benefit from. Putnam (2000) also adopts a positive view of social capital, advocating it as a means to combat the many social disorders, such as crime, that are to be found in modern society. For Putnam, the networks that constitute social capital serve as conduits for the flow of knowledge.

Social capital therefore relies on a social network of relationships and is summed up by Field (2008) in two words: 'relationships matter'. Connections, developed over time, enable individuals to work together to achieve things they could not achieve in isolation, or that could only be achieved alone with great difficulty or at an extra cost (Nahapiet and Ghoshal, 2000). These connections are made through a series of social networks, within which individuals tend to share common values. In essence, such networks constitute a resource, a form of capital, which can be drawn on by its members.

More recently, social capital has gained popularity amongst economists (Lesser and Prusak, 1999) as a term to describe intangible forms of capital, allowing researchers to tackle issues from a new perspective, such as the importance of maintaining a regional perspective in social capital analysis (Ferragina, 2010). In this sense, social capital is viewed as an organisational asset in the same way as other forms of capital. However, this can be a misleading analogy in that social capital is not depleted through use (Ostrom, 2000), rather it is likely to be depleted through lack of use (Mohan and Mohan, 2002). Social capital has been linked with an organisation's ability to manage its knowledge resources and Nahapiet and Ghoshal (2000) suggest that social capital encourages co-operative behaviour, thereby facilitating new forms of association and innovative organisation.

The importance of social capital as a contributor to innovation has been the focus of much theoretical discussion. Research in this area has linked the acquisition of knowledge, not only with markets or hierarchy, but also with "the social capital accumulated within regions through networks of interaction and learning" (Landry, et al 2002, p.3). Indeed, supporters of social capital theory argue that it provides capabilities for creating and sharing knowledge

that improves innovation capability. Putnam (2000) cites two types of social capital: bridging and bonding. The latter refers to the value assigned to social networks made up of homogeneous groups, whereas bridging social capital refers to the value assigned to networks made up of heterogeneous groups. Lesser and Prusak (2000) outline structural, relational and cognitive dimensions of CoPs in relation to the development of social capital:

- The structural dimension emphasises how CoPs encourage networks to develop among individuals with similar interests. Structurally, a community can serve as a clearinghouse for linking individuals, as a reference mechanism for evaluating the knowledge of other individuals without having to contact them directly and also as a conduit for connecting CoP members to people outside the immediate network;
- The relational dimension provides a means of testing the value and commitment of CoP members. This is closely associated with levels of trust between CoP members that can be supported through opportunities to evaluate the trustworthiness of others within the community;
- The cognitive dimension includes shared artefacts', stories and "vernacular" within the community. These dimensions help to improve organisational performance by supporting CoP members in managing their own knowledge and in encouraging participation.

(Lesser and Prusak, 2000, p.256)

Lesser and Storck (2004) argue that the social capital resident in CoPs leads to behavioural change, resulting in greater knowledge sharing which, in turn, positively influences organisational performance. They suggest that a cohesive community, such as a CoP, might act as an engine for the development of social capital, and that social capital decreases the learning curve, increases responsiveness to customer experiences, reduces rework, prevents reinvention, and increases innovation. Trust plays a significant part in providing the necessary conditions for knowledge sharing (Scarbrough, et al 1999). It is also an essential element of social capital (Granovetter, 1985; Fukuyama, 1995; Putnam, 2000) and CoPs (Wenger, 1991; Wenger, et al 2002; Lesser and Prusak, 1999; Probst and Borzillo, 2008), as well as being fundamental for successful open innovation (Chesbrough, 2003; Aylen, 2010). If the social capital resident in CoPs influences knowledge sharing and innovation, then an important question is, why, theoretically, knowledge sharing and CoPs in SMEs should be any different from that in large firms.

CoPs and Innovation

Drawing upon the above discussion, for organisations that wish to innovate there are two clear imperatives; support the development and circulation of knowledge within communities and pursue alignments across communities. Aligning practice implies a critical shift for managers' roles towards that of facilitators who construct and support CoPs (Swan, et al, p.482). This could be through brokering roles as suggested in the work of both Hildrum (2007) and Swan et al (2002), who view power as a relational characteristic implicit in the social practices of communities and see it as integral to managers' attempts to construct CoPs. This perspective also helps make sense of how managers interact with other networks of practice or professional groups. It is worth noting that Swan, et al (2002), distinguish between networks of practice and CoPs, claiming that networks of practice (NoPs) play a critical role in the innovation process by engendering shared identity (p.480). However, they suggest that networks differ from CoPs because they are bound by formal institutions and governance which control certain aspects of practice, such as membership of the network. Here they adopt Brown and Duguid's (2001) definition of a 'network of practice'³. A problem of networks of practice is that they produce a different epistemic culture, linked to their social identities, which might encourage the flow of knowledge within networks, but restrict the flow of knowledge between networks. From this position Swan, et al (2002), posit that such networks can constrain innovation processes that rely on integrating knowledge across networks.

It is also suggested by Swan, et al (2002) that professional groups involved in innovation are often resistant to change because of their vested interest in maintaining control over their particular domain of knowledge, or because they wish to protect their professional standing. Radical innovation in a professional context, therefore presents a considerable challenge to managers. In this situation, Swan, et al (2002) argue that the struggle of professionals to maintain their power can prevent the mobilisation of knowledge and the commitment required to drive innovation. In such circumstances, CoPs might be used as a rhetorical device for dealing with competing interests within the professional groups involved in radical innovation projects. Here, the rhetoric of 'community' is seen as a boundary object, as previously discussed by Hildreth, et al (2000). Medico acted as a 'system builder', working in an improvised way, across organisational boundaries.

The common view of CoPs is that they are more suited to supporting incremental rather than radical innovation (Amin and Roberts, 2008). However, the work of Swan et al (2002) demonstrates that CoPs can be used to mobilise external networks by using them as a rhetorical device, focused, in this instance, on a disease. For Medico this provided a rationale for cross-disciplinary working between CoPs in a multinational science-based organisation and helped mitigate any inter-professional conflict. While much of the research on inter-organisational CoPs suggests that there are complex issues related to their *manageability*, there are also indications that it is possible to successfully leverage innovation capability through their careful *cultivation*.

Innovation occurs both within the boundaries of organisations and also in the interstices between firms, universities, research laboratories, suppliers and buyers (Moingeon, et al (2006). The open innovation⁴ paradigm (Chesbrough, 2003) focuses upon how firms manage their rich network of internal and external relationships (Dahlander and Gann, 2010). According to Autio, et al (2008), firms involved in collaborative innovation should seek to explicitly foster the development of CoPs. There are clear links between open innovation and absorptive capacity, particularly with reference to the sourcing and exchange of externally developed knowledge (Vanhaverbeke, et al 2008). SMEs possess fewer resources than larger firms (Tödtling, 2001) and, it is suggested, might compensate for their lack of resources by utilising CoPs (Partanen, et al 2008) to support innovation and knowledge management. Conversely, it can be questioned whether SMEs can spare the necessary resources required for cultivating CoPs (Roberts, 2006).

McDermott and Archibald (2010), for example, suggest organisations must set aside time for CoP participation, provide training for CoP leaders and utilise simple IT tools to facilitate participation. Probst and Borzillo (2008) explore the use of ‘governance committees’ to assess CoP activities, and management sponsors to guide their activities. Such cultivation methods might not be seen as appropriate by SMEs because they divert vital resources away from core business activities. The CoP governance issue is controversial and the distinction within the literature between the cultivation and management of CoPs is unclear. We have reviewed over 60 publications in order to identify and categorise the factors that affect the functioning and performance of CoPs, and a summary can be found in Table 7.

Table 7 CoP studies and organisation size

	Firm size undetermined	Large Organisation	SME	Features
Emergent	Lave and Wenger (1991)	Wenger (1998), Wenger and Snyder (2000), Corso, et al (2001), Allee (2000), Cross and Prusak (2002), Morgan (2004), Mørk, et al (2006), Raz, (2007)		Informal and emergent structure based on mutual engagement, joint enterprise, and shared repertoire, which focused on individual learning.
Managed		Swan, et al (2002), Huang, et al (2002), Coakes and Smith, (2007), Scarso and Bolisani (2007), Pemberton, et al (2007), Garavan, et al (2007), Pastoors (2007), Probst and Borzillo (2008), Autio, et al (2008), Keil, et al (2008), Gertler (2008), Borzillo (2009), Corso, et al (2009), Macpherson, et al (2009), McDermott and Archibald (2010)	Handzic (2004), Tallman, et al (2004), Sturm (2006), Gausdal (2008), Akkerman, et al (2008), Du Plessis (2007; 2008), Gausdal (2008), Chanal and Kimble (2010), Knockaert and Spithoven (2009)	More complicated, modern organisational relationships result in the need for CoPs to be actively managed and given specific goals and responsibilities. Management implies high levels of control, which arguably stifles creativity, sharing and self-initiative (Andriessen and Verburg, 2004)
Cultivated	Amin and Roberts (2008), Moingeon, et al (2006), Cox (2005), Roberts (2006) , Li, et al (2009)	Brown and Duguid (1991; 2001), Orr (1991), Lesser and Prusak (1999), McDermott (1999), Hildreth, et al (2000), Wenger, et al (2002), Ackerman, et al (2003), Lesser and Stork (2004), Kimble and Hildreth, (2005), Loyarte and Rivera (2007), Juriado and Gustafsson (2007), Hildrum, (2007), Nicholls and Cargill (2008), Keil, et al (2008), Scarso, et al (2009), Zboralsk (2009)	Dewhurst and Cegarra Navarro (2004), Smedlund (2005), Hamburg (2008), Mason, et al (2008)	Setting a strategic context and providing direction (see Table 2) rather than direct management allows CoPs to find a legitimate place within an organisation. Cultivation implies less control, allowing CoPs to retain much of their independence whilst still receiving appropriate organisational support (Wenger, et al 2002).

Wenger (1998) originally viewed CoPs as both spontaneous and informal, whilst in later work, Wenger, et al (2002) suggest that, although CoPs cannot be managed, they can be cultivated. On the other hand, authors such as McDermott and Archibald (2010) suggest that globalisation has led to more complicated organisational relationships, resulting in the need for CoPs to be actively managed and given specific goals and responsibilities. However, the suggestion that CoPs require strong, formal leadership from top management and hence less independence means that their interpretation of a CoP is far removed from Wenger's (1998) original formulation. Loyarte and Rivera's (2007) arguments seem contradictory, suggesting that CoPs are beyond the control of organisations, whilst at the same time offering examples of 'successful' cultivated CoPs with compulsory membership and a focus on strategic objectives. Imposing formal structure and reducing independence does seem likely to destroy much of the core elements that make a CoP different from formal groups. Lack of independence will surely stifle the spontaneous, emergent nature of CoPs, reducing levels of trust and discouraging voluntary membership, all essential elements for organisations which want to benefit from CoPs.

Trust and shared norms of openness and reciprocity facilitate organisational learning, lower the transaction costs involved in knowledge exchanges (Dyer and Singh, 1998), and support the development of future relationships (Autio, et al 2008). Reciprocity is therefore an important element of community participation and members of a CoP take it as given that their contribution will come back to them (Wenger, et al 2002). Trust promotes co-operation (La Porta, et al 1997), and the lack of it is likely to be an issue in networks such as CoPs, that tend to be formulated as informal rather than formal agreements (Braun, 2006). Trust presents particular difficulties for SMEs whose fear opportunistic behaviour from competitors highlights the importance of trust and personal interaction in building networks (Gulati, 1995; Fukuyama, 1995). Harding and Pawar (2001) posit that lack of trust manifests itself in fear, at both a personal and organisational level⁵, and is a strong inhibiting factor for knowledge sharing in SME networks. Individuals fear losing their expert status whereas organisations fear disclosure of their competitive knowledge. This raises the question of whether organisations generally are willing to start innovation projects with new partners (Wohlfart, et al 2003).

SMEs in particular might refrain from participating in such innovation networks, especially with new partners, because of the increased risk to their competitiveness (Meeus and Oerlemans, 2000). On the other hand Meeus and Oerlemans (2000) also observe that the

often limited resource base available to SMEs does not negatively impact on innovativeness and they are able to develop adaptive behaviour that is conducive to their innovative performance. This suggests that trust rather than resources presents a more likely barrier to innovation through collaboration in SMEs. The ability of SMEs to thrive and grow relies on 'know-how'⁶ acquired from external sources and innovation is an important part of this process (Harding and Pawar, 2001). Whereas large organisations gain competitive advantage through size or ownership of assets (Tidd, et al 1997), Harding and Pawar (2001) consider SMEs, who have neither of these sources of advantage, need to create and sustain competitive advantage by innovating in terms of new products, processes and services. They suggest that participating in networks is one way of SMEs acquiring such know-how. Harding and Pawar (2001) studied know-how transfer in 'heterogeneous' networks, i.e. networks of different SME types, rather than 'homogenous' networks, i.e. SMEs of a similar industry type in the manufacturing sector and they examine the benefits networking brings in terms of SME competitiveness and the regional economy of the West Midlands.

Harding and Pawar's (2001) research is based on a longitudinal study of twelve SME networks over a period of 18 months and involved two types of network. The World Class Network (WCN), a thematic (based on a particular business theme) network whose objective was to disseminate best manufacturing practice and the ADAPT club, a horizontal (general interest) network seeking to build a general sense of place, allowing members to share their experiences. The methodology adopted a two tier approach. Firstly, each SME completed a standardised questionnaire at each interval in conjunction with a researcher. Secondly, data was collected based on observations, discussions, informal and formal interviews with the network members. These were then compiled into case studies. It is worth noting that the results and discussion in Harding and Pawar (2001) is restricted to data from only two sets of questionnaires available at the time and may provide limited evidence of tacit knowledge sharing within SME-SME networks. However, these preliminary results indicate a taxonomy depicting typical characteristics, at least within manufacturing SMEs, that range from vertical, horizontal, and thematic, to heterogeneous and homogeneous⁷. They also identify both closed and open strategic networks. In the context of SMEs this work is useful in helping identify suitable network types, i.e. an open horizontal network with flexible, open membership seems appropriate for sharing tacit knowledge and might also be viewed as a type of CoP.

Welter, et al (2003), review the role trust plays at different stages of business development, in both intra and inter-firm relations and in different environments. In discussing the role of trust in SME networks within regional clusters, Welter, et al (2003) indicate that there are differences in SME approaches to collaborative practice across countries, regions and even within industrial sectors. In economies with strong institutional support, such as in Germany, personal trust plays an inferior role in business relations. Conversely, where institutional support is weak, personal relationships and trust play a more prominent role. This has implications regarding whether CoPs can be cultivated in SMEs and used to support collaboration where institutional support is weak, i.e. the UK coalition government. According to Harding and Pawar (2000) the main issue for SMEs being building trust and developing strong personal relationships with other, often competing, firms.

The success of SMEs depends on their ability to utilise external networks efficiently (Harding and Pawar, 2001; Dodgson and Rothwell, 1994; Nooteboom, 1994). Government policy needs to promote knowledge transfer through networking and collaborative R&D programs to reduce the cost of transferring and exploiting scientific and technological knowledge (Mowery, 1994; Knockaert and Spithoven, 2009). This view is confirmed by Autio, et al (2008), who observe that innovation policy interventions need to progress beyond promoting first-order additionality, ie. direct R&D subsidies, to promoting second-order additionality, i.e. knowledge spillovers, horizontal knowledge exchanges between firms, and other meso-level, or community-level effects.

The cultivation of CoPs presents only a partial KM solution for SMEs involved in innovation. CoPs are considered an introductory vehicle for knowledge management (du Plessis, 2008) as well as an important way to boost technological learning and firms' ability to commercially exploit new innovations (Autio, et al 2008). However, for the reasons outlined in this paper, CoP cultivation is often problematic for SMEs. Research has tended to focus on large firms, with little empirical data relating to the cultivation of CoPs in SMEs. Our review of the literature (Table 7) demonstrates that there are few publications in relation to the management of CoPs in SMEs and even less on their cultivation. It is our intention to carry out an in-depth, case study-based investigation in SMEs where CoPs are to be found in order to, inter alia, explore how they have been cultivated and/or managed, and what benefits they have generated.

Preliminary findings

This case study-based research uses a thematic approach to analyse interviews with owners/senior managers in science-based SMEs in the Northeast of England. A thematic approach seeks to unearth relevant themes within a text at different levels, and facilitate the structuring and representation of these themes (Attride-Sterling, 2001). Thematic analysis does not rely on a pre-existing theoretical framework and, as it can be used to report meanings, experiences and the reality of participants (Braun and Clarke, et al 2006). We have already carried out a thorough literature review (Table 7) and this has provided some indication of potential themes that might emerge from the interviews. It must be acknowledged that there are some methodological limitations to the case study. The results are restricted to three interviews in one SME and we need to conduct further interviews to gain a broader comparison of views across a range of such organisations. Nevertheless, coding of the interviews, using Nvivo 9, has revealed a number of interesting emerging themes. The most significant themes in terms of coverage, i.e. the number of coded occurrences (shown in brackets) were:

- Importance of customer relationships (16)
- Approaches to competitiveness and business growth (14)
- Knowledge sharing (10)
- Trust based relationships (7)
- Informal collaboration with other firms (6)

- Views of innovation (5), although less significant in terms of coverage, are still important in terms of the scope of our research. The organisation's views on innovation are very interesting. They claim that “... *absolute innovation does not apply to our organisation*”, viewing innovation as creating ‘new’ products, i.e. closer to the concept of radical innovation. They see their own work as ‘problem solving’, i.e. closer to the concept of incremental innovation:

We have no products of our own, and therefore, in terms of innovation, we don't generate any new products as such. We would class, in our case, the sort of innovation as finding solutions to customer's problems. Also looking for areas where we can introduce different technology to the areas that we are already reasonably expert in. We do pride ourselves in the fact that we have specialist knowledge in the production of granules.

Discussion and conclusion

Building and maintaining strong, long term relationships with customers and suppliers was important to long term success, as the Operations Director explained:

We pride ourselves on building very strong relationships with customers, I mean we've customers that go back 20 plus years and I think that's testament to the fact that we have developed good working relationships with those customers.

Trust was seen as paramount within these relationships and building trust was viewed as a more lengthy process with firms outside of Europe. Firms outside of Europe were considered to be:

... very, very particular and everything takes a very long time and , and they have to go through this trust building exercise which... involves quite a few visits, before the point they get to when they say "Right, okay we're now going to go with [Company name omitted].

Negotiating with overseas customers is seen as a more lengthy process than it is with European firms and involved longer trust-building exercises, i.e. visits by both parties, in order to get to know each other are usual. In order to build trust, they will often take on 'smaller' jobs to prove their capabilities. This process is seen as part of the negotiation/trust building that is required to make long term gains. Intellectual property rights (IPR) are also an issue of trust and confidentiality/secretcy agreements are often used to protect their customers' intellectual property, such as the chemical 'formulations' used in manufacturing products for customers (i.e. trade secrets). This approach reflects the views of Saint-Onge and Wallace (2003) and Bagchi (2010) who consider trust to be an issue for SMEs. Good communication is important in building trust-based relationships to ensure that customers are comfortable with the way these issues are handled:

We all get involved with secrecy or none disclosure agreements because people's formulations are their intellectual property. Clearly, if we simply give the formulation to another company who is sub-contracted to us, if it was a disreputable company, they could go off and start producing that particular product... there's trust but it's backed up with sort of contractual agreements.

Part of this relationship building process involved networking with customers and suppliers, mostly through more formal channels and organised events, such as exhibitions, but informal face-to-face contact was still very important in maintaining high levels of personal contact. The company considered its market to be a 'niche' market with no competition. This view

seems very unusual in what is considered to be a very competitive industry. The firm's perception of no competition could be a reason for its lack of interest in collaboration with other SMEs, i.e. lack of motivation because there are no competitors? The claims of 'no competition' seem unusual and needs to be investigated further, perhaps by speaking to customers and suppliers. This view also needs to be compared with views of collaboration in other similar SMEs. There was evidence of knowledge sharing with customers who are frequently invited to seminars and other events to improve their product knowledge and help the suppliers gain new customers:

We invite major suppliers here who we get, sort of raw materials from but who sell to the industry, and we will give them, if you like, seminars on different sort of process techniques which sort of can help them go and find more businesses... er, business, and has a reciprocal effect in that they put us in touch with businesses who want help... sort of knowledge.

This strategy is followed in the hope that the company will also gain more work, highlighting the importance of reciprocity. The firm does use IT to share information with customers and suppliers but face-to-face contact is still important to building these customer/supplier relationships, particularly in the early stages of the relationship. Although meeting up with competitors informally on a friendly basis does happen, there is no evidence of informal inter-firm collaboration or partnership innovation activity. The firm seems happy to pass on business that it cannot do itself, because of a lack of capacity, or because it is not its 'line of work', which is often a reciprocal process. The firm might get a similar recommendation back from a competitor at some time in the future. However, there was a very clear view expressed that there is "*not much to be gained*" from collaboration in terms of benefits to the firm's competitiveness. The company did not view itself as innovative and described itself more as a problem solver. It would often find a 'better' way of processing its customers' product, i.e. a more efficient and therefore cheaper method; and stressed that:

[innovation is]... more, sort of, trying to come up with ideas how to solve or provide solutions to problems that our customers may have.

The literature indicates that SMEs often leverage personal networks rather than CoPs when building trust. The organisation's problem-solving ability could, therefore, be seen as a form of incremental innovation that is reliant on the pool of expertise and tacit knowledge of individuals in the organisation. This finding in itself hints at the presence of CoPs, at least within the organisation, and requires further investigation. That said, there was no interest

shown in collaboration with other SMEs, which is likely to have an impact on the presence of CoPs (whether emergent, managed or cultivated) because there needs to be a sense of mutual engagement. There appears to be some degree of mismatch between the literature and the opinions expressed in the interviews. This should generate some interesting and original findings during the course of our investigation.

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¹ Absorptive capacity is the ability to recognise the value of new, external information, assimilate it, and apply it to commercial advantage (Cohen and Levinthal, 1990).

² In economics, a public good is a good that is non-rivalrous and non-excludable. Non-rivalry means that consumption of the good by one individual does not reduce availability of the good for consumption by others; and non-excludability that no one can be effectively excluded from using the good (Varian, 1992).

³ “Epistemic networks where practice creates the common substrate... [but] relations among networks members are significantly looser than those within a community of practice. Such networks are seen as critical to innovation because they allow the emerging local knowledge of particular groups to be accessible to others within the broader epistemic culture” (Swan, et al 2002, p.480).

⁴ Open innovation allows organisations to open up their innovation processes, searching outside of their organisational boundaries for mutually beneficial relationships (Chesbrough, 2003).

⁵ For the individual this is a fear of losing employment. For the organisation it is a fear of losing business or going out of business (Harding and Pawar, 2001).

⁶ ‘Know-how’ refers to making tacit knowledge explicit (Nonaka, 1991).

⁷ Vertical networks - based on associations of supplier firms; Horizontal networks - based on the ‘Industrial District’ model where firms self-organise along horizontal lines; Thematic networks - based on a particular business theme; Heterogeneous - containing different types of SMEs; Homogeneous - representing SMEs of the same type (Harding and Pawar, 2000).